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BOTANY.[1]

The Eastward Extension of Pinus ponderosa Douglas, var. scopulorum.—This pine, according to Professor Sargent, extends throughout the Rocky Mountain region eastward to "the Black Hills of Dakota, Colorado, and Western Texas" ("The Woods of the United States," p. 119). The same statement is made in vol. ix. of the "Reports of the Tenth Census," p. 193. Coulter, in the "Manual of Rocky Mountain Botany," says that it "is found throughout the Rocky Mountains." In one of the maps (No. 12) accompanying Professor Sargent's ninth volume of the census reports alluded to above, the range of this pine is indicated by colors. Its eastern border may be described as a line beginning near the northwestern corner of Montana and running by a somewhat sinuous course to the southeast corner of the Territory, where it swings out into Dakota so as to include the Black Hills; it immediately passes back westward and northwestward into Wyoming to the Rocky Mountains, near the front range of which it then passes southward to Texas, following pretty closely the 105th meridian. This pine, therefore, according to this map, and all the descriptions referred to, reaches its most eastern station in the Black Hills of Dakota, at about 103° of west longitude.

In a recent botanical excursion into the northern portion of Nebraska I found this pine at a number of stations fully three degrees farther to the eastward of the Black Hills. It is abundant along the bluffs of the Niobrara River from near the 100th meridian to near the 102d, and probably much farther westward. On the buttes which abound in Northwestern Nebraska, along the head-waters of the White River, this pine is so abundant as to give them, at a distance of a few miles, a black appearance. In this the buttes of this part of Nebraska resemble the Black Hills. Whether these bodies of pine are connected with the Wyoming forests I have not been able to determine with certainty, not having had time to follow the river farther; but from various apparently trustworthy accounts I am led to believe that there is such connection. Whether these Nebraska pine-forests are connected with those of the Black Hills I have not determined, but think they are not.

Upon the bluffs bordering the Great Cañon, in which flows the Wasahancha Creek, commonly called Long Pine Creek, pines abound. This cañon extends in a north and south direction, on the south side of the Niobrara River, and is about fifteen miles east of the 100th meridian. Inquiries failed to indicate the existence of the pines eastward of this cañon, and I think that we may note this station as the most eastern point reached by this species. It is interesting to note that the Indian name of the creek, Wasahancha, is said to mean "where the pines extend far out," as if the Indians had also noted the remarkable eastward extension of the Rocky Mountain pine.—*Charles E. Bessey.*

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[1] Edited by Prof. CHARLES E. BESSEY, Lincoln, Nebraska.

The Westward Extension of the Black Walnut.—The westward limit of the black walnut (*Juglans nigra* L.) is given by Sargent as Eastern Nebraska and Eastern Kansas ("Woods of the United States," p. 76, and vol. ix. "Reports of the Tenth Census," p. 131). Upon map No. 5, belonging to the census report, the line marking the western boundary of the black walnut area enters Iowa from the north about twenty miles east of the northwestern corner of the State; it crosses the Missouri River into Nebraska a short distance below Sioux City, passes through Lincoln, and enters Kansas on the 97th meridian, where it then bends to the westward, reaching, in Central Kansas, the meridian of 98½° of west longitude, as it does also in Middle Texas.

I wish now to place on record the occurrence of the black walnut upon the Niobrara River and its tributaries in Northern Nebraska as far west as the 100th meridian. Upon the Wasahancha Creek ("Long Pine") it grows abundantly, in company with the Rocky Mountain pine (*Pinus ponderosa*, var. *scopulorum*). I doubt whether these two trees can be found in company anywhere else upon the continent. Each has stretched out a long arm from its forest area, and the two trees have thus come together.

At the station mentioned I saw walnut-trees between two and three feet in diameter, and am informed that, several years ago, a considerable quantity of walnut lumber was manufactured from the trees in the cañon.—*Charles E. Bessey.*

The Iron-Wood Tree in the Black Hills.—Although limited westwardly to "Eastern Iowa, Southeastern Missouri, and Arkansas, to Eastern Kansas, the Indian Territory, and Eastern Texas," by Sargent ("Woods of the United States," p. 95), I recently observed the iron-wood (*Ostrya virginica*), in considerable abundance, upon the head-waters of Rapid Creek, in the Black Hills of Dakota. The trees were not large, but were loaded with their hop-like fruits. It occurs also in Northern Nebraska, upon the Niobrara River and its tributaries, and in the eastern counties along the Missouri River.—*Charles E. Bessey.*

Still Another Tumble-Weed.—The list of plants having the habit of rounding up their stems and branches so as to form a nearly spherical plant body, which at the end of the season breaks away at the root, thus forming a "tumble-weed," must be increased by adding the winged pig-weed (*Cycloloma platy-*

phyllum). This plant grows sparingly about Lincoln, Neb., but along the Platte River it is very abundant upon the sandy soil near the river, and upon land which has, after ploughing, been allowed to lie idle. About Long Pine and Valentine it almost entirely replaces *Amarantus albus*, the common tumble-weed, but at Chadron the latter occurs almost to the exclusion of the winged pig-weed. At a little distance the two plants look exactly alike excepting in color. The winged pig-weed is of a light yellowish-green color, while the other is dark green.—*Charles E. Bessey.*

Botany in the A. A. A. S.—An examination of the daily programme issued by the Association shows that there were seventeen botanical papers presented for reading in Section F. The zoological papers numbered twenty-two. Taking the time estimated by each author as necessary for the reading his paper, one finds that the botanical papers averaged thirteen minutes in length, and the zoological ones seventeen. This would indicate that there is still some work left for the Botanical Club. It should weed out more of the short notes and hastily-prepared papers. Of course, it is not just to say that short papers are necessarily of less value than long ones, or that papers are valuable in proportion to the time they consume in the reading; nevertheless, it remains true that many short papers are so because of the fact that the author did not take time to fully prepare himself.

The Botanical Club appears to have been very successful this year, one hundred and forty members having recorded their names at this meeting, against one hundred and twenty-one at Buffalo, and eighty-five at Ann Arbor. One of those present writes that "every one noticed the prominence which botany has taken in the Association. Yellow badges were numerous. The single hour—a short hour—for a few of the days was too short for the work of the Club. More time could have been profitably given to informal discussions and short notes. The botanical papers of the Association, and of the Club, were numerous and of good quality. The receptions and excursions were well planned, well patronized, and gave an excellent chance for acquaintance and a comparison of methods."

Botanical News.—There have lately appeared English translations of two valuable German botanical works,—viz., "The Comparative Morphology and Biology of the Fungi, Mycetozoa, and Bacteria," by De Bary, and the "Lectures on the Physiology of Plants," by Sachs. Both books are brought out by the Clarendon Press of Oxford.——"The Task of American Botanists" is discussed by Dr. Farlow in a paper in the July *Popular Science Monthly*, which he previously read before the

American Society of Naturalists. The author rightly urges American botanists to work along lines suggested by their surroundings. "In the remoter districts the absorbing work for some time to come must be the collecting of specimens and the accumulation of field-notes." In the older parts of the country the author urges histological study and "the study of the life histories of different plants, more especially cryptogams." The paper deserves to be widely read.——Dr. Farlow's address as vice-president of Section F of the American Association for the Advancement of Science, on "Vegetable Parasites and Evolution," contains much suggestive matter. For the higher parasites,—*e.g.*, the species of Cuscuta,—"they may be regarded as degenerate forms of other phanerogams." As to lichens, the author sees no reason "why we may not consider the gonidia to be what they appear to be,—viz., algæ; and the hyphæ, fungi parasitic on the gonidia." As to the origin of the fungi,—*i.e.*, the group,—the view "which seems to be more in accord with existing facts than any other" is that they have arisen "not from any one primitive group of algæ, but from different groups of algæ at different periods in the progress from below upward." Incidentally, the author gives his reasons for believing that the species of fungi are more numerous than those of the phanerogams.——Late numbers of the *Journal of the Linnean Society* contain Baker's further contributions to the "Flora of Madagascar;" Bateson and Darwin's "Effect of Stimulation on Turgescent Vegetable Tissues;" King's "Observations on the Genus Ficus, with special reference to the Indo-Malayan and Chinese Species;" Massee's "Disease of Colocasia in Jamaica," with an introductory note by Morris; and Bennett's paper on the "Affinities and Classification of Algæ."——In the August *Journal of Botany* Baker continues his "Synopsis of the Tillandsieæ," and Jackson his "Remarks on the Nomenclature of the Eighth Edition of the 'London Catalogue.'" A short paper on the "History of Botany in Japan," accompanied by a portrait of Ito Keisuke, is instructive and entertaining.——An important paper by Voglino, on the Agaricini, appeared in the July *Nuovo Giornale Botanico Italiano.* Microscopical measurements and descriptions of the spores, basidia, and sterigmata are given. ——The August *Journal of Mycology* completes the enumeration and description of the "Septorias of North America."—— An important change in the addresses of two of the editors of the *Botanical Gazette* is announced in the August number. Dr. Barnes, having accepted the chair of Botany in the University of Wisconsin, must be addressed hereafter at Madison, Wis Dr. Arthur succeeds Dr. Barnes in the chair of Botany in Purdue University, and must be addressed hereafter at Lafayette, Ind. ——*Bulletin No. 4*, from the Botanical Division of the Department of Agriculture at Washington, contains a list of the "Desiderata of the Herbarium for North America north of Mexico," including Ranunculaceæ to Rosaceæ. We trust that botanists will very generally respond to the appeal for specimens.

ENTOMOLOGY.[1]

On the Homologies of the Wing-Veins of Insects.—Using the conclusions of Adolph[2] as a starting-point, Redtenbacher[3] has made a very elaborate investigation into the homologies of the veins of the wings of insects; and, although his conclusions may not be generally accepted, they will be of interest to all systematic entomologists. The work treats of each of the orders of winged insects, and is illustrated by twelve plates, upon which are one hundred and sixty figures of the wings of insects. We have space for only a few extracts from the introductory portions of the memoir.

The geologically-older insects have a richer venation than the later-appearing forms. It is evident from this that the oldest insect-forms were provided, so to speak, with a superfluity of veins, and that in the course of development all that were superfluous have been lost. In this way simpler wing-venation has been brought about.

Various views are held regarding the origin of the wings. While some believe the wings to be sac-like prolongations of the body-wall, Fritz Müller calls them lateral continuations of the dorsal plates. Oken, Graber, Gegenbauer, Landois, Palmèn, see in them metamorphosed tracheal gills. Weissmann is of the opinion that the wing-nuclei form themselves out of the peritoneal sheath of tracheal trunks, and only secondarily cause a prolongation of the body-wall.

That the wings of insects are equivalent to the tracheal gills of the *Ephemerid* larva can hardly admit of a doubt. Whether they have arisen out of tracheal gills is still questionable, for it is not beyond the range of possibility that the opposite is the case,—viz., that wings, through metamorphosis, become tracheal gills. It is not only possible, but even probable, that the wings of insects were originally not active, but merely passive, organs of motion, serving, like the pappus of the Compositæ, for example, for the floating and spreading of the progeny to a distance.

The essential nature of a rudimentary wing is a hollow sac, which is filled with blood-liquid, contains nerves and tracheal filaments, and whose two plates do not grow together until the

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[1] This department is edited by Prof. J. H. COMSTOCK, Cornell University, Ithaca, N. Y., to whom communications, books for notice, etc., should be sent.

[2] Ueber Insectenflügel, von Dr. G. Ernst Adolph, Nova Acta der ksl. Leop.-Carol.-Deutschen Akademie der Naturforscher. Band xli. Pars II., Nr. 3. Halle, 1879.

[3] Vergleichende Studien über das Flugelgeäder der Insecten, von Josef Redtenbacher, Annalen des k. k. Naturhistorischen Hofmuseums. Band i. pp. 153–231. Wien, 1886.